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ABSTRACT

Five award-winning high school and college economics education projects of the Program for Innovative Teaching of Reasoning are summarized. Preceding the summaries, an essay by Marvin Bower of the Joint Council on Economic Education suggests that developing reasoning abilities creates a happier and more effective individual, a more effective voter, and a more effective and satisfied jobholder. The first project contains five lessons in economic reasoning for high school students. Students recognize choices, consider alternatives, develop criteria, apply knowledge, assess probable consequences, and take action based on cost-benefit analyses. The second project suggests experiential projects in population dynamics, agriculture, marketing, housing, and education for college economics students. The third project describes the Managing Independent Living Program for institutionalized adults in transition. The program teaches the process of reasoning to solve problems related to career and life planning, housing, and consumer needs. The fourth summary describes a comprehensive high school program which teaches the basic principles of economics, reinforces these principles with various activities, and requires students to apply economic logic to a variety of subjects and to hypothetical situations. The final summary proposes college economics course assignments, each based on an economic policy issue. (KC)

Developing Reasoning as the Fourth R

George G. Dawson, Editor

The winning entries
From the 1981–82
Reasoning Awards Program of the
Joint Council on Economic Education

GEORGE G. DAWSON is professor of economics and director of the Center for Economic Education at Empire State College–State University of New York at Old Westbury.

TO OUR READERS

The accounts published in this book are condensed versions of the original reports. The complete reports can be obtained from

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Contents

Foreword

This booklet contains summaries of the winning projects in an Awards Program for Innovative Teaching of Reasoning. The deep concern of the Joint Council on Economic Education in how to teach reasoning derives directly from the Council's purpose. to help develop, in young people, by the time they graduate from high school, an ability to understand and make reasoned judgments about the questions facing society and themselves as members of that society. Only in this way can they become responsible citizens and effective decision makers.

The Awards Program was created and funded by Marvin Bower, who was the chairman of the JCEE from 1966 to 1977. The JCEE is grateful to him for his generosity and service. His explanation of the purposes and benefits of the program serves as an introduction to the reports.

Briefly, the objective of the competition was to encourage the development of creative strategies for teaching reasoning. The underlying premise is that reasoning is a specific skill that can be applied to the numerous choice-making situations all of us face in our roles as consumers, producers, and citizens. While no professional economist would claim that economics is the only discipline that requires the application of sound reasoning, the field does offer rich opportunities for structured choice making.

These summaries show methods of teaching reasoning that are applicable to a variety of disciplines and situations. The methods are in the context of broad issues to which individuals, communities, and wealth-creating institutions must apply a decision-making process.

Michael A. MacDowell
President, JCEE

The Case for the Fourth R

Marvin Bower*

Reading, writing, and 'rithmetic need to be joined by the fourth R—reasoning—especially reasoning about economic matters. Every person with a capacity to reason will be:

1. A more effective and happier individual
2. A more effective voter
3. A more effective and more satisfied jobholder.

THE MORE EFFECTIVE AND HAPPIER PERSON

Every person's effectiveness and happiness is controlled by his/her willingness and ability to make the decisions and solve the problems of daily life, and by the quality of those decisions and solutions. Information that creates a problem reaches the individual through ideas and events in personal activities or in the world at large. That information may come from some physical happening, or from what other people say or do. What, if anything, should be done? If the decision is to tackle the problem, how well is it solved? Decisions, decisions—life is made up of them. Most call for ability to reason. For example, many high school students are tempted to drop out The quality of their reasoning in making that decision will determine their effectiveness and happiness for the rest of their lives.

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* Marvin Bower is a consultant with McKinsey & Company and a former managing director of that firm. He is a graduate of Brown University, Harvard Law School, and Harvard Business School and an honorary trustee of Brown and of Case Western Reserve universities He has been active in the Joint Council on Economic Education for some twenty years and was chairman of the board of trustees for nearly half that period. This paper is based on remarks he made at the annual meeting of the National Association of Economic Educators of the Joint Council on Economic Education at Cincinnati, Ohio, on October 12, 1980.

On lesser levels of significance the individual is faced constantly with choices and trade-offs. The money he uses for one purpose cannot be used for another. Neither can the time. Should the family buy a washing machine right now on credit or postpone the purchase until they save enough to buy for cash—perhaps at a discount—and save interest on the loan? Should people make decisions that look only to the short term or should they look to the long term and plan for the future? The quality of such decisions will determine an individual's success, self confidence, and happiness. A high proportion of individual decisions requires skill in reasoning about economic issues, together with skills in reading, writing, and calculating. The four R's must work together.

A MORE EFFECTIVE VOTER

Most votes that citizens cast call for decisions on candidates. And most of those decisions call for ability to reason, especially on economic matters. This reality is illustrated by a full page advertisement of the then current issue of *Fortune* that ran in the New York *Times* of September 9, 1980. The large headline said, "WHO VOTED FOR INFLATION? YOU DID." Then in discussing an article about inflation the advertisement continued:

> What's behind raging inflation? It's partly the pressure we all put on our political system to gain our special interests. A major *FORTUNE* analysis examines how democracy helped put us in our present fix and how it can get us out.

We can't expect the typical citizen to understand inflation—even economists differ on its causes and certainly its cures. But every citizen is a victim of inflation, and his vote either helps to stimulate it or slow it down. How can he learn enough reasoning to enable him to vote intelligently in his own long-term interests? In the long term interests of his children and grandchildren? Or in the interests of the nation as a whole?

Let's look further at inflation, which is a powerful divisive force in our society. President Johnson called it "the pickpocket of the poor." Certainly inflation is a cruel burden for pensioners and others who must live on fixed incomes—chiefly the elderly. Those who save see their purchasing power melt away. Those who borrow have advantage over the lenders. The wealthy have the best chance of avoiding inflation's devastations.

A bipartisan group of thirteen former senior government economic officials has formed the Committee to Fight Inflation. Its purpose is to

urge strong and persistent action to control what they term the nation's "chronic inflation." Their policy statement, issued by the Committee on its formation, as quoted in the New York *Times* of June 22, 1980, concludes with these words:

> While our inflation is largely a consequence of government actions, those actions in turn reflect excessive public demands for the good things of life—rising living standards, better provisions for income security, more assistance to the disadvantaged among us, a cleaner environment, fuller protection of the public's health and safety, and special benefits for a growing number of interest groups. Each of these demands is thoroughly understandable Together, however, they release persistent inflationary forces—first, by demanding of the government greater outlays than tax revenues can finance, second, by demanding of the private economy greater output than its languishing productivity can support.

Let's take a more specific example—helping the handicapped, a heart-moving objective. Congress passed the Rehabilitation Act of 1973 which states that "no otherwise qualified handicapped individual" should be excluded from "any program or activity receiving federal assistance." The Department of Transportation (DOT) concluded that this language means that every new public bus must include a wheelchair lift which adds $15,000 to $20,000 to the cost of the bus, that within ten years half of each city's buses must have such lifts, and that within thirty years subway systems must retrofit key stations to make them accessible to wheelchair users, a rule that requires installation of elevators as well as special equipment such as "gap fillers" between platforms and trains.

The New York City area Metropolitan Transportation Authority has voted to defy this rule which would require capital investments of $1.5 billion in current dollars. A May 1979 survey of Washington's fully accessible subway system found only thirty-four wheelchair users among the systems 200,000 daily riders. In icy Milwaukee with 100 lift-equipped buses, only nine wheelchair users took the bus all last November.

Discussing this subject editorially, the *Wall Street Journal* (September 29, 1980) says that the DOT regulatory mentality "converts a compassionate impulse into an economic monstrosity." Evidently reasoning has prompted action by two congressmen, the *Journal* goes on to say:

> Rep. James C. Cleveland (R., N.H.) and Sen. Edward Zorinsky (D., Neb.) have each sponsored amendments that would give local transit systems some flexibility in serving the handicapped. Perhaps they will stop such absurdities as the DOT's insistence that the Vail, Colorado, transit system equip its 14 buses with wheelchair lifts, even though there is only one wheelchair user in the entire service area, and she says she wouldn't take the bus anyway.

MORE EFFECTIVE JOBHOLDERS

The need for reasoning on the job is obvious. Personal, technical, and organizational issues arise daily. Finding optimal solutions for productivity and quality problems requires joint reasoning between labor and management.

Without passing on the soundness or the net long term value to the economy of giving government support to the Chrysler Corporation, it does provide a dramatic illustration of the value of rational decision making on economic issues. With bankruptcy looming, union and management, stepping away from their traditional positions, concluded a mutually satisfactory agreement that met the government's requirement. The union eased its stand on wages and benefits and joined management in seeking federal loan guarantees. Whatever the long term merits of the arrangement may prove to be, it represented an attempt to solve a type of problem that is rarely addressed rationally.

Of course, most work-related issues are less striking in their implications than the Chrysler case. My overall concern is not with the stakes involved in any individual case, but with the pervasiveness of the problem. I am concerned because most adult Americans depend too much on emotions and not enough on reasoning to solve worker management problems.

Only through reasoning can we solve the problems of productivity and quality so as to enable the nation to compete effectively in world markets and to ensure the profitable growth of our economy that is necessary for solving basic national problems. Reasoning ability is needed in the electorate if there is to be broad understanding of the fact that it is easier to divide a larger and larger economic pie than a static or shrinking one.

NEED FOR NEW COURSES AND METHODS

To me the case for the fourth R seems clear and impelling. The effort must begin with a definition of what reasoning is and should include a statement of the minimum basic requirements for a literate person to be able to reason effectively.

An understanding of basic economic principles can make important contributions to teaching and learning reasoning ability. In the Chairman's Letter in the 1980 Annual Report of the Joint Council, Richard E. Heckert said:

> . . . I do know it is vital to get across to every student in this country a few basic concepts. how a society's wealth is created . . how trade offs are

always involved in the distribution of scarce resources ... the crucial roles played by capital, labor and technology. I do know it is vital for students to learn to use these basic concepts and how to apply them when analyzing problems, developing alternatives and making choices at both the personal and societal levels.

There is no question that an understanding of the basic concepts—what we call simple *economic literacy*—is vital. In a democracy, bad economic results tend in a major way to reflect poor economic choices made by millions of people and their elected representatives.

I am in hopes that teaching methods or a course for teaching reasoning can incorporate basic economic concepts without requiring students also to gain an understanding of such additional macro elements as the Federal Reserve System and fiscal and monetary policy.

However, the teaching of reasoning is not the exclusive province of economic teachers. Other disciplines can contribute. In law school, for example, we were taught rigorous reasoning without specific reference to economic concepts. Contributions to teaching reasoning can also come from logic, fact-based problem solving, programmed and computer-based learning, decision theory, mathematics, psychology, the scientific method, communications, and other disciplines and knowledge areas.

What we need is an amalgam of innovative, creative, but simple principles and methods for teaching reasoning that is short and that can be infused into other courses or into curriculums of our schools and colleges and adult learning institutions of all types. In fact, individuals from different disciplines or from other fields entirely can perhaps team up to meet these demanding requirements. Possibly only a complete breakaway from traditional educational methods will provide the answer.

Specific teaching methods or courses of study need to be developed for various grades and ages. This will not be easy because our public education through high school is a locally directed activity. We have nearly sixteen thousand individual school districts. Each district specifies its own curriculum and teaching methods, except as the individual state may provide some regulation. Of course, the three R's are taught nationally but not necessarily in the same manner. To add the fourth R and infuse the teaching of this basic skill into the elementary and secondary schools in a short time will require teaching and enthusiasm of both learners and teachers about the great value of improved reasoning.

An even greater challenge—but also with a substantial payoff—is to reach and teach reasoning to adults. For in addition to the other problems adults must be attracted to the learning place. These include adult educational programs conducted by high schools, community colleges, colleges and universities, service clubs, Y's, companies, labor unions, and public and commercial radio and TV stations.

No matter where the learning takes place, the end result must be greater student competence in reasoning, especially about economic issues. If the subject is to be taught widely and rapidly throughout the nation to people of all ages, the content must be so impressive—and the teaching methods so effective—that the learners will become its most active and effective advocates. It is my hope that the learners will be fascinated, even thrilled, by the power that their newly acquired capability brings them. If the power of this learning does become clear to the learner, then the program will spread by word of mouth to meet the goal of achieving widespread reasoning competence in a short time.

To stimulate people with creative ideas from many fields to come forward and contribute to this vital effort, the Joint Council on Economic Education has established an award program. There are three awards of $7,500 each for developing teaching methods and courses in reasoning about economic issues adjudged to be the best designed to achieve the foregoing objectives in. (1) elementary and secondary schools, (2) colleges and universities, and (3) institutions of adult learning.

Perhaps as important as the monetary reward are the intangible rewards. the satisfaction of making a major contribution to the nation's well-being and the prestige that will come with success.

Choices in the Marketplace: Using Economic Reasoning to Analyze Consumer Behavior

Donald Wentworth, George Whitney, Kenneth Leonard, Paul Heyne, and Laurie Stevahn
Washington State Council on Economic Education, Seattle, Washington

INTRODUCTION

Our objective was to improve consumer education instruction by introducing the use of economic reasoning to students and teachers as a means of analyzing consumer behavior and developing personal criteria for judging "wise" consumer behavior. The process employed to accomplish this included:

1. Conceptualization and statement of objectives
2. Development of curriculum materials
3. Pilot testing of the materials
4. Implementation by way of teacher training workshops
5. Comprehensive evaluation of the project's impact

The incorporation of economic reasoning into the project gave it a unique character and contributed to its enthusiastic reception by educators in Washington State.

RATIONALE

Originally begun as an attempt to include economic principles in consumer education, this project underwent a metamorphosis during its developmental stage. At first, the project directors—Donald Wentworth, George Whitney, and Kenneth Leonard—thought that student economic

understanding would be enhanced if they provided a description of the overall operation of the economy, introduced the "tools and concepts" of economics, and highlighted the role of consumers. The result of this strategy was unsatisfactory because it failed to help students understand their behavior as consumers, and it did not give them much insight into the consumption behavior of others.

The project directors decided to define economic literacy as economic reasoning. Symmes and Gilliard addressed this topic in the following manner:

> Economic literacy is best defined in terms of a capacity to apply reasoning processes when making decisions about scarce resources. Economic reasoning implies having the capacity to: define the choice related problems which confront us, identify and rank criteria or goals which shape our choices, identify possible alternative choices, use knowledge (facts and concepts) to analyze the probable consequences of choosing each alternative and take action based upon evaluation of the costs and benefits of various alternative choices![1]

Paul Heyne, an economist at the University of Washington, agreed to work on this project to help focus the instruction on economic reasoning. Concurrently, the staff of the Washington State Council on Economic Education surveyed consumer education classes and materials. The survey uncovered definite patterns in consumer education instruction. The content usually focused on budgeting, personal financing, and financial protection in the form of insurance. There appeared to be no reason for additional work on these topics—a new focus was needed.

The project directors decided to stress consumer decision making. Why is choice necessary? How do people make their choices? Do producers and consumers make choices in similar ways? How does a consumer make a "wise" choice? The analysis of these questions provided an excellent opportunity to help students develop their reasoning skills and to learn economics as the students studied their own behavior.

The curriculum the directors developed emphasizes that everyone must choose, i.e., that choice-making is a dominant aspect of human behavior. This perspective helps students understand why everyone—whether producer or consumer—makes choices, how the choices are made, why individual values influence every choice, and how these choices interact in an unhindered free market.

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1. S. Stowell Symmes and June V. Gilliard, "Economic Literacy—What Is It?" in S. Stowell Symmes, ed., *Economic Education. Links to the Social Studies* (Washington, D.C.: National Council for the Social Studies, 1981), p. 5

One important feature of the material is its emphasis on individual differences. Because people are different, their incentives to behave in particular ways vary just as do their ideas of personal satisfaction. At first glance, this phenomenon introduces great complexity into the study of consumer behavior. At second glance, it helps people understand why it is so difficult to convince consumers to act as "good" consumers. No person's criteria for choice making will explain or satisfy someone else's criteria. Therefore, all consumers must establish their own criteria for "wise" consumer choices and try to keep their behavior consistent with their criteria. This perspective "frees" students from the necessity to evaluate consumer behavior according to criteria established by adults and set forth in a particular consumer education textbook. It allows students to reason their way through to their own choices on the basis of their own values and perceptions.

THE STRUCTURE OF THE CURRICULUM MATERIALS

An integrated instruction concept, including both lectures and demonstration lessons, was used for the curriculum materials. The original concept of the unit and the preliminary steps were the work of the three project directors, Wentworth, Whitney, and Leonard. Then Paul Heyne wrote a series of short lectures on economic reasoning, and Laurie Stevahn, a secondary school teacher, developed the demonstration lessons. Each lesson had a two-fold purpose. One was to introduce students to a basic premise in economic reasoning, the other was to provide a classroom activity that would elicit student behavior exemplifying the principle explained in the lecture. The following is a short summary of each lesson and of the reasoning process involved.

Lesson 1

The lecture explains why all people must economize in the use of their money and resources—to choose which goods and services to obtain with their limited means. The demonstration lesson analyzes student decision-making behavior. The purpose is to help students define the choice-related problems that confront them.

The lesson includes a variety of activities in addition to the lecture, which defines the term "economize," explains scarcity, and illustrates the topics by showing that a decision to purchase a record might entail the postponement of the purchase of new jeans. For example, the students are asked "How many decisions have you made today? What kinds of decisions have you made?" The responses will show that people have to

make many decisions every day, and this observation will lead to the study of the individual's role as a decision maker in the marketplace

The students are taught how to take notes efficiently, and then they are presented with three situations that involve decision making They must take notes on each situation and mention any similarities they find in those situations. For instance, in one situation the student must choose between buying a record album and going to a movie In another, the student is visiting Disneyland and wants to go on three rides, but has tickets for only two. The situations are then discussed, and the students must point out the resources and the wants at issue in each situation.

The discussion of the situations sets the stage for the short lecture. After the lecture, one student is given $10.00 and told that he or she may purchase anything in the classroom that has a price tag attached to it. The student has one minute in which to make a choice. The students are then asked. "Was the student economizing? Why, or why not? What did the student do that fit the definition of economize? Did the student do anything that did not fit the definition of economize?" The other students are asked to tell what items they would have purchased with the $10.00 and to explain why. The lesson ends with an emphasis upon the principle that scarcity forces choices between alternatives for the greatest satisfaction.

Lesson 2

This lesson emphasizes the importance to consumers of substitutes The students learn that substitutes exist for all things, that satisfaction is individually determined, and that different people with the same information may make different choices. This conclusion is vividly demonstrated when students are asked to purchase food described in a grocery store advertisement. Given the same $10.00 budget, no two students ever buy the same items. This lesson helps students set up criteria and specify alternatives.

The students review the vocabulary learned in Lesson 1 by completing a simple crossword puzzle composed of the new terms (economize, consumer, choice, resources, scarcity, and alternatives). This is followed by the lecture, which shows that economizing can become more complicated than in the examples in the first lesson It is pointed out that even the wealthy have to economize (make choices in the marketplace), that time as well as money is scarce, that economic goods have substitutes, that people's abilities and preferences can change, and that satisfaction is the criterion consumers use in making choices.

Now the students are divided into groups of three to five, and each group receives a copy of the same grocery advertisement. Each student gets a budget sheet and is told to spend up to $10.00. The students write the names and prices of the products in the appropriate rows and columns on the budget sheet. Several students are asked to read their lists aloud,

while the others compare their choices with those of the readers, who must explain their choices and tell how prices influenced their decisions. The readers must note how their choices and reasons are both similar to and different from the choices and reasons of the others. A second budget sheet is then distributed, but the allowance has been reduced to $5 00 Again the students must make choices and explain their decisions. It is pointed out that the same incentives (satisfaction and price) are still at work, but now the students must compare the previous list with the new one and explain why they gave up certain products, retained some of the original choices, and chose substitutes for others. In particular, they must tell what they had to give up to stay with an original choice—what were the costs to the student in real terms? This lesson closes with the students being asked the following "quick" questions:

- How is consumer satisfaction determined?
- What might be some substitutes for newspapers?
- How do individuals determine whether a product or service is worth the price?

Lesson 3

This lesson emphasizes the importance of viewing *cost* as a sacrificed alternative Students are forced to judge their decisions in light of the sacrifices that must be made, as well as the benefits to be obtained. Students consider the probable consequences of each alternative and take action based on their evaluation of relative costs and benefits. They learn that the real cost of purchasing (or choosing) a good (a product or service) is the next best alternative one gives up to obtain that good.

At the start of the lesson the students are asked to tell how they economized time and money over the past weekend. Examples of their responses are listed on the board. In a short lecture the teacher then shows that all choices involve costs, defines opportunity costs, provides illustrations of real costs, and to illustrate that two people can make different decisions and still be "right" because they have different values. The students are reminded of the costs that accompanied their food choices in the previous lesson, the real cost being the next best choice of products they would have selected with their limited resources.

The students receive an outline form on which they write a definition of opportunity cost and state the opportunity costs illustrated in the lecture and in several situations presented by the teacher. The following are examples of the situations:

- You bought a nylon jacket instead of a leather jacket so that you would have enough money to go on a ski-trip. What was your opportunity cost?

- You want to participate in a bicycle race tomorrow at 4:00 P.M., and you are busy putting new tubes in your bike tires. A friend calls you and asks if you would like to go water skiing with his family. They are leaving in half an hour and will return home at 3.45 tomorrow after noon. You decide to go water skiing. What are your opportunity costs?
- The school lunch menu reads. Hot Lunch–80¢, Cold Sandwich–50¢, Apple–25¢, Cookies–20¢, Milk–10¢. You have 80¢, and you decide to buy the hot lunch. What are your opportunity costs?

Next, the students are asked to reconsider their examples of economizing in time and money during the previous weekend and to state their opportunity costs in each situation. The lesson ends by having the students write their own definitions of opportunity cost and by having the class comment on the definitions.

Lesson 4

In this lesson, the students analyze how the actions of other people influence their choices, and they consider how price serves both as a measure of value and an allocating device. They also learn how their behavior influences that of other consumers. Again, they must consider the probable consequences of their choices, and the role of price in assessing these consequences. They will find that price is a measuring device that indicates the relative value of different products and services in the marketplace, and that it is a rationing device that allocates products to consumers who value the product or service most highly.

A major activity in this lesson is an auction. The students receive an auction activity form entitled "Who Gets What for How Much?" The form includes spaces in which the students will list the items offered for sale and the purchase price of each item. Below this part of the form there are three questions with spaces for the student's answers. The students must keep these questions in mind as the auction takes place.

1. What determines the price you are willing to pay for goods or services?
2. What is the value of an item offered for sale?
3. How was it determined who got what during the auction?

The students are told that they are all consumers in the marketplace and that they may bid for items or stop bidding at any time. The teacher then takes bids on a paper airplane, getting as much cash as possible. The students list this item on their activity form along with the final purchase price. Next, the teacher auctions off a candy bar. This is followed by the auction of a second paper airplane, a second candy bar, a final paper airplane, and a final candy bar. Questions like the following are asked.

- Why were some of you willing to pay good money for a paper airplane when you already have paper with you?
- Why were some of you willing to pay more than the market price for a candy bar?
- Were you cheated? Why or why not?
- What determined the price you were willing to bid for each item?
- What was the value of each item offered for sale?
- If you had been told that 100 candy bars would be offered for sale during the auction, what is the most you would have been willing to pay for the first candy bar? Why?

The teacher then reviews the responses given to the previous questions and invites student comment. Emphasis is placed on (1) the relationship between price and scarcity, (2) the relationship between price and the satisfaction the buyer expects to obtain from acquiring a scarce item, (3) recognition that value is what an individual is willing to give up to get the item (this includes the opportunity costs), (4) recognition that the buyers could have used their scarce resources in many other ways, and (5) the principle that prices allocate scarce resources (the items were sold to the students who were willing and able to pay the highest prices).

As a concluding activity, the students see a transparency of the popular comic strip "Herman" by Jim Unger (Universal Press Syndicate). (In this episode, Herman is in a restaurant. He wants white bread, but the waiter brings another kind. He asks for pea soup; but the restaurant is out of that, so he must take chicken noodle soup. Instead of baked potato, he must settle for French fries. In retaliation, he offers to pay his check with "two fives" because he "ran out of twenties.") The students must analyze this humorous situation, using the principles they have learned. They should conclude that the consumer did not obtain as much satisfaction out of the substitute items as he would have obtained from the products he ordered. His sarcastic offer to pay the waiter "two fives" is his way of conveying his dissatisfaction to the restaurant.

Lesson 5

This lesson concentrates on a non-price-allocating device, rationing, to help students analyze the costs and benefits involved when price is not used as a measuring device. Here they use the concepts they learned previously to reason out the probable consequences of changing from a price-based to non-price-based allocation system. They should learn that it is difficult to allocate goods and services on the basis of "needs" because individuals define their own "needs" differently, and suppliers have no way of really knowing whose needs are most important. Price will be

seen as a rationing device used to allocate products and services to consumers who are willing to pay the most for them.

The first part of a three-part lecture is presented, showing that it is difficult to allocate goods on the basis of perceived "needs" because people define their needs differently. The lecturer uses food to illustrate the problem because everyone needs food, but tastes vary so greatly that the type of food that satisfies one person's "need" might not satisfy another's. This leads, then, to a discussion of the allocation of gasoline. A worksheet entitled "Allocating Gasoline" is distributed to the students. The sheet lists twelve users of gasoline (such as fire fighters, farmers, airlines, traveling salespeople, police, manufacturers, families, and teenagers without jobs), and the students must establish an order of preference to show who needs gasoline the most.

Disagreements will probably surface as the class discusses the question "Who needs gasoline the most?" One student can read his or her list, and the ensuing discussion should reveal that problems arise when we try to allocate gasoline according to needs. The personal values of the different gasoline users might be specified, and this phase of the lesson can end with a discussion of the problems that are likely to occur when *any* good is rationed according to need.

The second part of the lecture deals with the following question:

> If the nation gets into another "oil crisis," should the government ration gasoline by entitling everyone to the same amount? Would such an allocation fit our "needs" better? (The lecture shows how hard it is to define "the same amount of gasoline for everybody." Does a family of seven get seven times as much as a person living alone? Is it the same amount per person, per automobile, or per licensed driver? Should the owners of motorcycles get the same amount as owners of cars? Should the owners of recreational vehicles get as much as those who use their cars in their jobs?

These examples illustrate the problem and lead to the conclusion that it is impossible to allocate gasoline on the basis of need because no one can fairly and accurately assess what people's needs are! The principle can be demonstrated in the classroom by having the teacher offer to sell one felt-tip pen. There will be only one pen, but several students will want it. It will become evident that there is no objective way of deciding who needs the pen most, so the pen will be sold to the highest bidder. The students can discuss what would have happened if the teacher had tried to give away the pen according to needs. They should be able to answer such questions as, "What does the value and price of a product have to do with the allocation of that product?"

The third part of the lecture begins by asking whether or not it would be fair for the rich to have gasoline while the poor go without it. (The lecturer notes that both the rich and the poor would tend to purchase less gasoline at higher prices because of the opportunity costs

involved, and that the price system pays attention to the enormous variation in people's wants and abilities.) On the one hand, the sales representative will be willing to pay more for gasoline so as not to lose sales and income. People who do not use their cars for their work, on the other hand, will not want to pay the higher price, and thus they will be making gasoline available to those who *must* drive. In short, the price system will ration the gasoline.

This part of the lecture also deals with the problem of deciding what is "essential" in the use of gasoline. What one person considers essential another considers nonessential. Pricing solves the problem by letting buyers decide what is essential for themselves and what nonessential items to forgo. Price permits consumers to make comparisons as they decide how to use their scarce resources. If a serving of steak is twice the price of a serving of fish, the consumer knows that steak must yield twice as much satisfaction or it should not be purchased.

Price also tells suppliers what to produce. They will try to produce more of whatever is in short supply because they can increase their own incomes by selling the higher-priced items. In doing this, they help to reduce the shortage. Prices allow consumers and producers to recognize which products are in shortest supply or most valued, and their voluntary actions result in the adjustment of supply and demand. The lesson ends with a discussion of the following questions:

- What might be some problems that suppliers would encounter if they tried to ration digital watches based on people's needs?
- How is it decided who gets digital watches in the marketplace? In other words, on what basis are digital watches rationed in the marketplace?
- What do value and price have to do with how the market allocates goods and services?

Lesson 6

Here the students find that the reasoning skills used to understand consumer behavior extend to both buyer and seller. The lesson emphasizes that both producer and consumer economize, try to anticipate each other's behavior, and always remain very dependent upon one another. Thus, buyers and sellers adjust to each others' economizing behaviors in the marketplace.

The lesson requires two 50-minute periods. To begin, the teacher asks: "When you go to the store to purchase a new ten-speed bicycle, what guides your economizing behavior (your choices on how to spend scarce resources) in the marketplace?" After some discussion, the students are asked to list all the jobs that must be done in order to manufacture a bicycle and make it available for sale. The teacher then poses the following questions:

- How do suppliers coordinate all of the activities that go into making and supplying products?
- How do suppliers decide what to produce?
- How do suppliers set prices?

The students are told that they should be able to answer these questions at the end of the day's session.

Now Part I of a three-part lecture is given. Our dependence on others is stressed. the students learn of the many people and jobs involved in producing a simple item such as a pencil. Then they see how the resources used in producing records are made available. They learn that all the people involved in the process chose to cooperate to satisfy their own wants and that cooperation promised to deliver more satisfaction than any other choice available to them.

The lecture is followed by a simulation called "Dealing in the Marketplace." The class is divided into two groups, one to be sellers and one to be buyers. One student is appointed Keeper of the Buyer and Seller Cards, and another is chosen to record all market transactions on the Class Transaction Sheet. Each student gets an Individual Transaction Sheet upon which to record the products—artichokes and sugar beets—bought or sold, the prices, and the gains and losses. All transactions are reported to the student with the Class Transaction Sheet. Three rounds of trading are conducted, with each round lasting five minutes. Students may make as many deals as they can in the time permitted. The players act on the basis of instructions on the buyer and seller cards, but they also have a certain amount of discretion.[2] After each round the class summarizes its experiences by discussing the Class Transaction Sheet.

On the second day, the session is opened with questions of the following type:

- Sellers, how did you decide how many pounds of artichokes and sugar beets to offer for sale in each round?
- What product did buyers demand more of in each round?
- Did you have a net gain or loss of money? What might explain your gain or loss?
- How do farmers decide how much of a product to grow?
- What motivates suppliers to produce goods or services and offer them for sale?
- How are suppliers and consumers dependent on each other?

2. For a complete description of the simulation see Paul Heyne and Laurie Stevahn, *Choices in the Marketplace* (Seattle: Washington State Council on Economic Education, 1982), pp. 59–64 and 73–87.

This leads to Part II of the lecture, which shows how suppliers are affected when consumers change their minds. "What would happen if millions of dedicated golfers gave up the game in order to play tennis?" Of course, suppliers start to offer more tennis balls and fewer golf balls. A supplier who does not respond in this way forgoes valuable opportunities. Money and shelf space will be tied up in products with no value to the supplier.

Part III of the lecture examines other consequences of the change in preference from playing golf to playing tennis, such as less crowded golf courses and more crowded tennis courts. Students are asked to predict what golf course owners will do if golf links are unused. They find that the owners will lose income, and will then look for other ways to obtain money from their land. If there is a great demand for housing, the land may be sold to real estate developers. There will be less land for golfers and more for households. Now the students predict the choices the tennis court owners will make if the courts are always crowded. Rates for the use of the courts will probably rise, and the owners may consider expanding their facilities by bidding land away from other possible users. Other effects of the higher rates will be noted, for example, some tennis buffs will play less often. Thus, price rations the courts to the players who value tennis most highly. In short, price changes adjust the wants of consumers and the offers of suppliers to one another.

The lesson closes with an exercise entitled "Demand, Supply and Incentives to Act." Students receive a sheet containing five questions, such as the following:

1. If the price of computers decreased in the marketplace, you would probably expect:
   A. computer sales to remain the same.
   B. small businesses to invest in computers.
   C. less computer research and development.
   D. a decrease in the reliance of banks on computers.
2. Sport shoes have become very popular among young people. This most likely is an incentive for:
   A. shoe manufacturers to make more sport shoes.
   B. shoe salespeople to sell fewer sport shoes.
   C. shoe repair services to lower the repair prices on sport shoes.
   D. retail shoe outlets to stock the same quantities of sport shoes.

Students must select the best response and explain their reasoning.

Lesson 7

To analyze the function of information in consumer decision making, this lesson focuses on "impulse buying." People choose products based on expectations of future satisfaction; therefore, information is valuable.

Obtaining information requires time and effort, so consumers economize even while acquiring information. Students find out that consumers occasionally buy on impulse, not because they are stupid or irrational, but because the cost of making a purchasing mistake is less in those cases than the cost of obtaining the information. Students learn that information specialists provide valuable services if they enable consumers to use their scarce resources economically, for acquiring information requires the use of scarce resources and involves opportunity costs.

The problem of uncertainty is dealt with in Part I of the lecture. No one ever knows exactly what will happen in the future, and uncertainty can cause problems for consumers and suppliers making choices in the marketplace. To dramatize the concept of uncertainty, the teacher calls the students' attention to three boxes labeled A, B, and C at the front of the room and asks who would like to buy the items under each box. Few respond, because the teacher has not told them what is under the boxes. The teacher then tells the class that under A there is a T-shirt, under B there is a poster, and under C there is a record album, but gives no details about the items. Some are more willing to buy now, but others are still reluctant. After students are provided with the prices of the goods, additional purchase offers are made, and the teacher records them. Finally, the items are displayed, and the class discusses how the ability to see the goods influenced their decisions. Both the benefits and the costs of obtaining additional information are noted. (One cost is *time* that the students could have spent doing something else.) A discussion of impulse buying is held, with the class considering when consumers are likely to buy on impulse and when they would be hesitant to do so.

Part II of the lecture points out that people try to reduce risks by gathering information on goods and services, and that consumers will stop researching when the costs outweigh the benefits gained from the information obtained. Several examples are given, such as reading the reviews of a new record before buying it. It is shown that people spend more time and energy acquiring information before making a major purchase, such as buying a house. This is because the cost of making a mistake could be very great. The roles of vendors, brokers, and advertisers are explained as they pertain to the provision of information.

The lesson ends with an exercise called "Was It Worth It?" The teacher reads three episodes and asks the students to discuss each one, considering the value of the product in question and the costs and benefits involved in gaining information about the item. The following is an example:

> Sue needed a new three-ring spiral notebook. She really didn't want to spend her money on school supplies, and therefore was determined to pay the lowest price possible. She called three stores to check on the prices, and spent a total of five hours looking through newspapers for sale adver-

tisements. She went to two stores near her home before deciding to purchase a spiral notebook from one of them for 61 cents.

- Was Sue's research worth it?
- Were the benefits greater than the costs?
- Should she have gathered more or less information? Why?
- How would you have acted in this situation? Why?

OPTIONAL LECTURES

Two lectures are optional. They are "Costs and Benefits of Quality Improvements" and "Costs and Benefits of Consumer Protection Laws." They provide further examples of the use of economic reasoning skills. The benefits of quality improvements and of consumer protection laws are usually quite obvious, but the costs need to be pointed out. For example, the first optional lecture discusses such matters as the cost of additional police protection, of safer lawn mowers, and of the testing of new drugs. The second deals with problems relating to "child-proof" caps on medicine bottles, flame resistant materials, smoke alarms in apartment buildings, and safety rules. It is concluded that there are no pat solutions to the problem of deciding which consumer protection laws are worth the costs because (1) costs might exceed benefits and (2) people will be affected in differing ways since each person has a different set of values.

CONCLUSION

The entire package is short, easy to use, creative, and devoid of the menial tasks that are often associated with consumer education. Every opportunity is taken to teach economic reasoning. Students must recognize choices, consider alternatives, develop criteria, apply knowledge, assess probable consequences, and take action based on their cost/benefit analyses. The result is a new group of consumers characterized as healthy skeptics because they are aware that there are no costless choices.

A pilot test with eighteen teachers from seventeen different high schools in Washington State was conducted to assess teacher and student reactions. The results revealed that the participants regarded the unit as an interesting and valued learning experience. Still, implementation remained a problem—how does one take hold of a good idea and arrange to have it taught on a statewide basis? The solution was to hold a series of thirteen one-day regional workshops throughout the state. Three hundred teachers, representing nearly all high schools in the state, attended. Teachers of social studies, home and family life, and business education participated. They agreed to teach the unit and to send us pre-

and post-test student scores. To help teachers anticipate how their students might react, we "modeled" several lessons during the workshops to demonstrate how to use the lectures and activities. The participants were given detailed explanations of the unit contents and of how students of different ages, interests, and academic abilities responded to the lessons. Finally, the teachers heard a lecture designed to help them understand economic reasoning. The major points covered in the lecture were these.

1. Scarcity forces all people to choose.
2. Every choice and action is carried out with a purpose. People do not act randomly, they act to increase their well-being and satisfaction.
3. People behave in a dynamic manner, therefore, the means by which they gain satisfaction changes.
4. Producers and consumers act on the basis of incentives. They perceive an advantage to the actions they choose.
5. All choices involve alternatives, therefore, there are no costless choices.
6. The outcome of all choices lie in the future. Producers and consumers make choices on the basis of predicted outcomes.
7. People do not act with perfect knowledge. Choices are made on the basis of predicted outcomes, therefore, information is valuable.
8. Markets create information.
9. Exchange creates wealth. When an exchange takes place, both parties expect benefits to exceed sacrifices, or the exchange would not occur.

Through the workshop experience, the teachers learned to teach and use economic reasoning, became familiar with the creative demonstration lessons, and realized how convenient the materials were for classroom instruction.

Only seven lessons were developed so that teachers could include the material in their curricula without great cost. The lessons are purposely brief. The idea was to "Teach less, and teach it better." The project focused on consumer education because the subject was already popular in the schools and highly valued by teachers, administrators, and parents. Thus, we could be sure that reasoning would be taught, and that it need not displace other subjects. Instead of being seen as a threat, the unit was perceived as an aid to strengthen the existing curriculum. Teachers from nearly every high school in the state were involved, and it can be conservatively estimated that the unit will be used with 30,000 students a year.

Teaching economic reasoning helps children and adults to manage scarcity. Other subjects, such as "The Three R's," help people learn to gather and process information about a world of scarce resources, but it is economic reasoning that helps students *manage* their world of scarcities. Economic reasoning can serve as a capstone for the school curriculum.

Developing Economic Reasoning through Practicums: The Experience at New Mexico State University

Michael G. Ellis
New Mexico State University, Las Cruces, New Mexico

INTRODUCTION

Reasoning can be defined as the drawing of inferences or conclusions through the use of orderly and rational inquiry. Such a process is rarely learned in our normal style of education. Professors of economics will try to instill the reasoning process in students through lectures and exams as well as other but similar means of instruction. However, all that still constitutes "talking at" the students, giving them only a vicarious look at the reasoning process. The students are simply "hearing about" the reasoning process undertaken by others rather than experiencing it personally.

To remedy this shortcoming, students must be given the opportunity to go through the entire reasoning process themselves. A complete economic reasoning process might involve the following steps:

1. Exposure to formal economic theory in lectures.
2. Statement of site-specific economic problems.
3. Construction of theories and hypotheses by students.
4. First-hand data collection to test the hypotheses.
5. Drawing of inferences and conclusions from the data.
6. Reporting the conclusions and subjecting them to review and clarification.

The process described above is an ambitious one. Care must be taken to balance the "reason-facilitating" activities, such as lectures, data collection, and econometrics, with the reasoning activity itself. For example,

the exclusive use of lectures robs students of the enhancement of reasoning ability that would occur if they personally attempted to complete a data base and then carried out statistical operations on it. In like manner, students do not gain in reasoning ability if they concentrate only on data collection or data interpretation without a knowledge of theory. In short, the *total* sequence yields the highest return in reasoning.

RESOURCES

At the university level, a minimum of two faculty members will be needed. One should be an economist, and the other should be a statistician. The following are also necessary:

- Data management equipment for each student, such as HP-41C programmable calculators, for use in on site data collection and storage. Access to the university's computer center for computer card keypunching. Access to remote terminals for interactive languages.
- Two university vans for transportation.
- Detailed maps and secondary source data pertaining to each project.

When on-site investigations are necessary, permission must be obtained from local civil authorities and property owners to make the visits and to investigate specific economic problems.

THE INSTRUCTIONAL APPROACH

Every region faces its own unique economic problems, and these can be addressed by the students as part of the reasoning course. In southern New Mexico, for example, the problems of a poor agricultural population situated on an international border with language and income differences sets the tone for our reasoning practicum. Our approach was to group students from abroad whose countries have severe economic development problems with U.S. students and to ask them both to use this region as a proxy for a developing nation. The reasoning sequence, then, begins in the classroom.

The class is broken up into groups of four students. Each week projects are assigned, and each group is responsible for turning in a completed document. The projects have been designed so that groups can take advantage of specialization of labor. Each reasoning project entails several steps—the specification of variables, the preparation of instruments, statistical analysis, and the drawing of inferences—and participants are encouraged to specialize in those activities that most interest

them In this way, the students will be involved in the entire process but can hone the particular skills deemed most important. The next section contains examples of some of the reasoning projects used at New Mexico State University.

EXAMPLES OF REASONING PROJECTS

Approximately twenty-five site-specific projects were used, which were grouped under the general headings, given with the abbreviated list of projects that appears at the end of this report. For example, the three projects given under Population Dynamics were, (1) age distribution, (2) elderly populations, and (3) Indian census. One problem dealt with rest homes for the elderly, and this is described below to illustrate the instructional approach.

THE PROBLEM: *Rest Homes for the Elderly*

Las Cruces, New Mexico, has three rest homes for the elderly. One of the three wants to expand but has been denied a certificate of need. Such certificates are issued on the basis of a formula derived from census estimates of the aged population. The rest home operator claims that sunbelt migration has increased the number of the elderly and that more rest home beds should be provided.

1 *Lecture on Theoretical Issues.* The economist discussed the operation of free markets, the entry and exit of rest home operators, the quality of care, and prices. Then a discussion of market imperfections (such as imperfect knowledge, and traumatic illness which makes consumers "less than rational") was held. Finally, the perceived need for government intervention was discussed.

2 *Site-specific Problem.* The students were asked to respond to the call for more rest home beds in southern New Mexico.

3. *The Construction of Theory and Hypothesis by Students.* The students reasoned that the rate of change of the elderly population was a function of (a) the age distribution of the existing population and (b) migration patterns of prospective residents. Some method of estimating the number of new elderly arrivals had to be found to see if, indeed, demand would exceed supply. If demand were found to be greater than supply, the recommendation would be to relax the restrictive certificate-of-need legislation.

4 *Data Collection.* The statistician discussed various sampling techniques and the types of inferences that can be drawn from them. Population dynamics involve such specific sampling techniques as telephone surveys, mail surveys, voter registration surveys, and personal interviews.

The students designed various types of survey instruments, tested them on the campus population, and then set out to determine how many elderly persons there were in the community.

5. *Conclusions* Under the direction of the economist, the students interpreted the results of the data gathering attempt. The main theoretical tool was a comparison between projected supplies of and demands for rest home beds.

6. *Reporting Conclusions* The conclusions should be examined by the students' peers as well as by interested persons in the community. In this way, students learn of the effects such studies can have, and of any errors in their reasoning process.

Each student is responsible for several projects. Reasoning practice should be more complete when the entire sequence, from theory through data collection to the drawing of inferences, is actually conducted by the students themselves. A few additional projects are listed and briefly described below.

POPULATION DYNAMICS: *Age Distribution*

The objective was to estimate the age distribution of students on the campus of New Mexico State University. The construction of the sampling instrument was of little concern, the difficulty would be in the sampling frame. Where will there be a "normal" flow of students that will adequately represent the entire student body? In this study the students were asked to determine whether or not our student body was getting older and, if so, what the implications might be for future enrollments.

POPULATION DYNAMICS: *Indian Census*

The objective was to estimate the number of Tortugas Indians in the area. The definition of the variable was an important factor here. What constitutes being a Tortugas Indian? How does one define the variable "being an Indian"? How many Tortugas Indians live elsewhere? How can you be sure that any frame you have selected will not give biased results? Students needed answers to questions of these types in order to evaluate claims on the federal Bureau of Indian Affairs being made by local Indian tribes.

AGRICULTURAL MARKETING: *Marketing Farm Products*

The problem was to estimate the percentage of summer vegetables sold directly by the producer and the percentage sold to an intermediary. Students would need to find out how many "farm direct" agricultural

merchandising operations there were, and how much is sold during the Saturday and Wednesday markets in the downtown mall. The data would be used to evaluate the efficiency of our agricultural marketing system and to make judgments about how the system might be changed.

TRANSPORTATION: *Airline Demand*

The objective was to estimate the need—and hence the demand for—scheduled air carrier service to the Las Cruces Crawford Municipal Airport. Where do New Mexico residents want to go? How much cargo do they want to send? How much business travel would there be? How much pleasure travel would there be? To deal with questions of this type the students might do regression analyses to answer questions such as What is the relationship between firm size, occupation, trip length, and demand for local enplanements? Only after completing this type of analysis would they be prepared to determine whether or not Las Cruces should have a scheduled air carrier.

HOUSING: *Who Owns Houses?*

The question for this project was: "Is there substantial economic discrimination against minorities in the housing market?" In answering the questions the students had to find out what ethnic groups owned land and who owned the housing units in Las Cruces in order to determine the distribution of owner-residents by ethnic origin and gender.

EDUCATION: *Future Demand for Education*

"Do we need more or fewer schools?" "How can we estimate the need for higher education in the next five and ten years in Las Cruces?" Approaching questions of this type required the students to make population studies that would show how the age structure will determine the pupil population in different grades. They would also have to find out what other factors might affect the numbers. This project was of interest to us because we had been told to expect a decrease in the number of freshmen at New Mexico State University.

Other Activities

In addition to the projects are described above, the students did such things as estimate the total number of pecan trees in the Mesilla Valley, conduct surveys to find out who buys the area's chili crop and for what uses, estimate the number of "Cowboy Cadillacs" (pick-up trucks) used by students at the university, determine the need for more paved roads in Las Cruces, estimate the cattle population in the Mesilla Valley, collect data on the incidence of mononucleosis in the student population, survey the Las Cruces health care services to determine the type and mix of medical services available, estimate the average non-school-related

income of students at the university, and estimate the educational levels of the Las Cruces population by gender and ethnic origin. These activities were often related to policy questions. For example, after estimating the sources and magnitudes of incomes in Las Cruces, the students were expected to recommend a taxation policy. Some of the questions were quite sensitive, such as those relating to the ethnic origins of certain types of workers and whether or not the United States should open its borders to "guest workers." In an analysis of sampling techniques the students should be able to recognize the sorts of problems that arise in basing policy on possible answers to culturally sensitive questions.

CONCLUSION

There was enough variety among the topics covered in the practicums for all students to find projects of interest to them. A number of sampling methods and survey techniques could be used, such as transect sampling and aerial surveys in the case of the cattle count, and random sampling with telephone surveys for other projects. The students learned several research methods and statistical concepts by applying them to actual situations in the Las Cruces area, and they obtained first hand knowledge of the problems of definition, sample selection, treatment of sensitive questions, and others that researchers often face. Although several of the projects applied specifically to New Mexico, the approach could be employed in any other part of the country as well. Instructors elsewhere can develop their own lists of projects, or perhaps adapt some of ours to similar situations in their own regions. The important point is that the students learn to reason by going through the entire investigative process described above, and by actually collecting data and drawing inferences from their findings.

APPENDIX

The following is an abbreviated list of topics for site-specific projects in the southern New Mexico agricultural community.

Population Dynamics

- Age distribution
- Elderly populations
- Indian census

Cropping Patterns

- NMSU grass
- Stahman's pecans
- Mesilla Valley's pecans

Agricultural Marketing

- Marketing farm products
- Marketing the chile crop

Transportation

- "Cowboy Cadillacs"
- Airline demand
- Paved roads

Livestock and Fowl

- Grackle count
- Cattle count

Income Patterns

- Income level of students
- Las Cruces income levels

Medical

- How many cases of mono?
- Survey of medical services
- Rest homes

Education

- Educational level of secretaries
- Las Cruces educational level
- Future demand for education

Housing

- Mobile homes
- Who owns houses?

Employment

- Ethnic origin of onion workers

Sensitive Questions

- Sampling techniques; report on sexuality

Managing Independent Living: An Adult Education Program for Persons in Transition

Ruth G. Thomas
University of Minnesota, St. Paul, Minnesota

INTRODUCTION

Managing Independent Living is an adult education program designed to help participants successfully assume responsibility for making and carrying out practical decisions associated with establishing and maintaining an "independent living situation." In that situation the individual is responsible for recognizing, analyzing, and solving problems, for setting and achieving goals, for determining the needs of self (and possibly of others) and the ways to satisfy these needs, and for providing and managing resources.

The program is designed for adults who are approaching or experiencing a transition from a more dependent life style to a more independent one and who can benefit from greater intellectual competence and the development of attitudes that facilitate independent living. The program was developed for and tested with adult female offenders in a state residential correctional facility. However, the concepts and processes are appropriate (with adaptation) for other institutionalized populations experiencing a transition to more independent community living (e.g., persons in county-level correctional institutions) and for noninstitutionalized persons encountering a new level of independent living (e.g., displaced homemakers, persons in nonresidential treatment programs, students about to or undergoing their first experience in living away from home).

The program was developed and tested under Title 1 A of the Higher Education Act of 1965. Development took place at the correctional facility, with continual testing, review, and revision. The reviewers and consultants had backgrounds in higher education, adult education, vocational education, home economics education, CETA (Comprehensive Education and Training Act), corrections, and special education. The

program was developed over a 21 month period between October 1978 and June 1980 In 1981 the Minnesota legislature provided funding for the program on a continuing basis in the budget of the Minnesota Correctional Institution for Women.

A 323-page program manual was developed. It included curricula for group and individualized instruction, guidelines for program development, an annotated bibliography of reference materials, a directory of community resources, and guidelines and materials for evaluating participants and the program.[1]

PROGRAM RATIONALE

The period of transition to independent community living is a crucial one Its success determines, to a large extent, the degree of adjustment that people are able to achieve in a community. During this period the individual faces a large number of simultaneous changes. These usually include moving to a more independent living situation apart from an institution or family, assuming increased responsibility for supporting oneself and possibly others, and establishing oneself in a new milieu. Persons in transition must develop new psychological perspectives regarding themselves and their life style, and must acquire the thinking, problem solving, decision making, and management skills needed to regain or to attain an independent mode of living.

During the period of transition, adults often have access to vocational training and counseling services, but generally have little opportunity for education in the previously described management and decision-making skills required for independent living. Yet, it is at this time that these skills are critical. The Managing Independent Living Program can be conducted during the transition period to provide that educational opportunity and help people develop reasoning and management skills.

PROGRAM GOALS AND OBJECTIVES

General Goals

1 To help participants develop competence in solving problems of independent living, including:
   A. Management of resources (goal setting, decision making, resource identification, development, and allocation);

1 Ruth G Thomas, Diane Pokorney, and Jane Berge, *Managing Independent Living: Program Manual* (St Paul Division of Home Economics Education, University of Minnesota, 1980).

B. Choosing, developing, and maintaining a living environment which promotes positive growth for self and others (physical environment; interpersonal relationships; housing alternatives);
C. Provision of basic goods and services (alternatives, priorities, economic concepts; consumer education);

2. To facilitate psychological adjustment (self image, self confidence, support systems, economic and identity self-determination);
3. To facilitate integration of participants into community life (using community resources, entry into educational programs, career development; employability skills; communication skills.)

While instructional objectives and learning activities are designed to develop perspectives and a level of competence that have broad application, instruction focuses on three immediate and specific problems encountered by adults as they prepare for their own transition. These include career and life planning, housing, and consumer goods and services.

The curriculum covers those skills viewed as necessary to understand and delineate problems, and to determine and carry out solutions, including the ability to:

1. Conceptualize problems
2. Analyze situations and circumstances
3. Set priorities
4. Set and achieve goals
5. Develop a decision-making process
6. Generate alternatives
7. Expand concept of resources
8. Use resources effectively
9. Locate, organize, process, assess, and use information
10. Set criteria by which alternatives and outcomes can be judged
11. Differentiate controllable from noncontrollable elements in situations
12. Predict consequences
13. Structure time and events

THE CURRICULUM

The curriculum structure has two dimensions. Reasoning, decision making, problem solving, and management processes constitute one dimension (see Figure 1). The process takes participants from the point where they perceive the need for a decision or action through an investigation of alternatives, to a decision between alternatives, and on to execution of the decision. The basic components of the process are designated in the large circles in Figure 1. The terms surrounding each

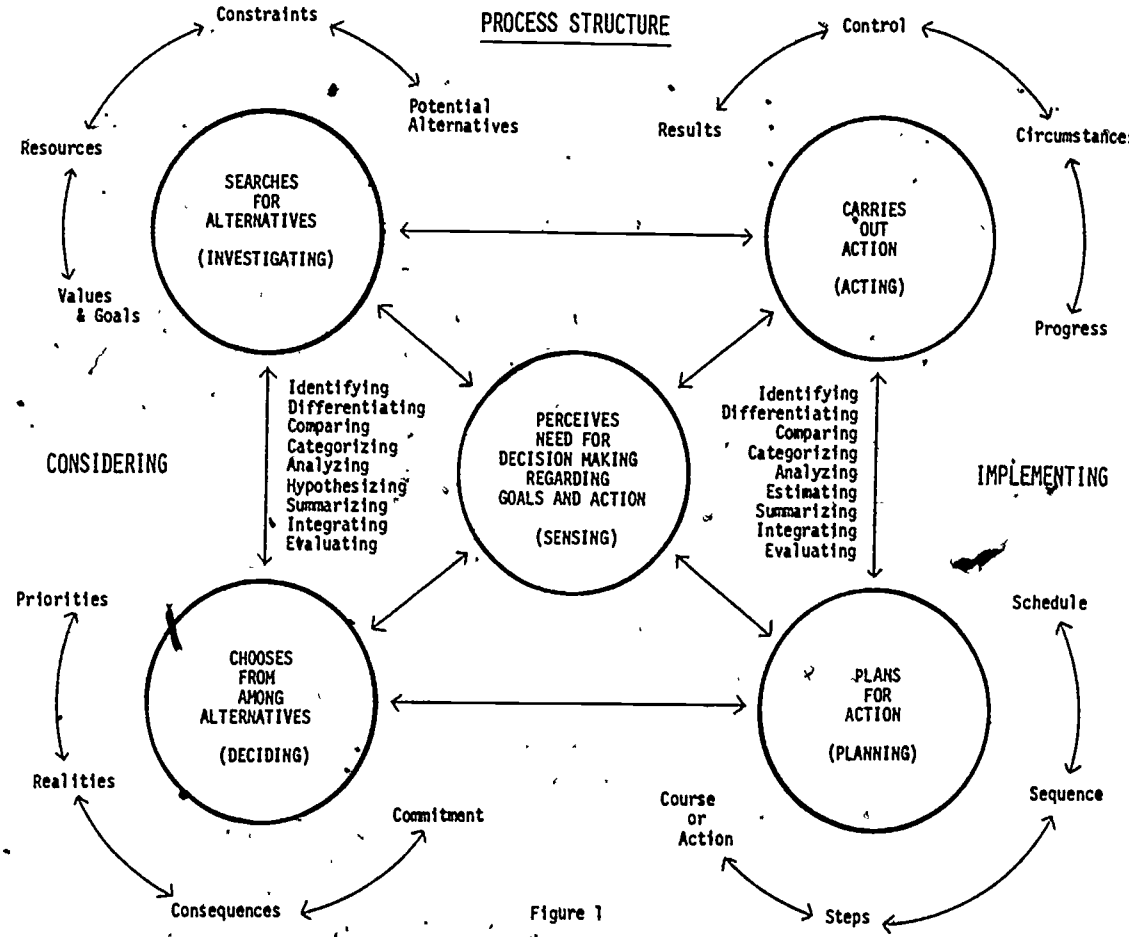
PROCESS STRUCTURE
Constraints
Potential Alternatives
Control
Results
Circumstances
Progress
Resources
Values & Goals
SEARCHES FOR ALTERNATIVES (INVESTIGATING)
CARRIES OUT ACTION (ACTING)
PERCEIVES NEED FOR DECISION MAKING REGARDING GOALS AND ACTION (SENSING)
CONSIDERING
Identifying
Differentiating
Comparing
Categorizing
Analyzing
Hypothesizing
Summarizing
Integrating
Evaluating
IMPLEMENTING
Identifying
Differentiating
Comparing
Categorizing
Analyzing
Estimating
Summarizing
Integrating
Evaluating
Priorities
Realities
CHOOSES FROM AMONG ALTERNATIVES (DECIDING)
PLANS FOR ACTION (PLANNING)
Schedule
Sequence
Commitment
Consequences
Course or Action
Steps

Figure 1

large circle represent key concepts related to that process component in the curriculum.

Figure 1 depicts two major process categories. One category includes *considering functions* (which encompass investigating and deciding processes), and the other includes *implementing functions* (which concern planning and acting processes). Mental processes required of participants as they become involved in the considering and implementing functions are listed on each side of the model and are similar for both categories.

The decision making process represented in Figure 1 is logically a sequential one. The human experience with the process, however, is frequently characterized by "back and forth," and "across-and-through" movements. Consequently, the figure intentionally shows a fluid, structure rather than a linear sequential one so that participants can easily enter the process at the point where their thinking is focused. The curriculum is designed to promote the development of more systematic movement through the process.

The curriculum emphasizes the development of reasoning abilities related to the considering functions. These are not armchair exercises, but actively involve the participant in analyzing problems and determining information needs and in creating and assessing ways of meeting those needs.

The three problems to which the process has been applied—career and life planning, housing, and consumer goods and services—constitute the second dimension of the curriculum structure. In all three cases, the process is focused on developing goals and action related to the transition to community life. As participants solve specific transition-related practical problems, they deepen their understanding and develop perspectives and skills that will help them analyze and solve other practical problems. By working through the same process to solve more than one problem, participants learn to abstract and generalize essential elements of the process.

The program manual, which contains the curriculum, is intended for the instructor's use in guiding participants through problem solving, decision making, management, and reasoning processes. The curriculum is process-oriented, emphasizing the application of cognitive processes in solving problems. Because the curriculum is individualized, participants work at their own rate on their own goals, and persons with differing levels of capability can be served.

The curriculum provides a pool of learning activities from which those most appropriate for different individuals and groups can be selected, and provides repeated practice opportunities for learning concepts and reasoning skills. Self evaluation reviews are built into the curriculum through tangible progress indicators. Instructional materials have been selected for their appropriateness for adults. Materials and

learning experiences are coded according to level of reading and cognitive skill demanded.

INSTRUCTIONAL MODES

Group Instruction

Program goals are accomplished through both group and individualized instructional modes. The purpose of group instruction is to encourage feelings of self-worth, to stimulate the participants' thinking about possible futures, to introduce independent living concepts, and to develop interest in pursuing these concepts in greater depth through individualized instruction. Participants are challenged to think about what *they* want as opposed to what may sound good to others. The focus of the group sessions is on having participants take stock of their current situation and consider what they would like to be and what they must do to accomplish that goal as well as alternative life styles, expectations regarding relationships with others, and the use of money income, time, and other resources.

A format of eight two-hour sessions distributed over a two-week period provides continuity and sustains high interest among the participants. Group discussions and presentations by guest speakers are the primary instructional modes. During group sessions it is important to refer frequently to the personal conferences so that the participants come to understand that the latter activity will help them to pursue objectives they have selected during group sessions. The role of the instructor is to plan and coordinate the sessions, choose guest speakers, present information, design experiences for the participants, and serve as discussion leader. Groups should have between five and fifteen participants, so as to maximize both group interaction and individual participation.

Some independent work outside the group should be required. The assignments serve to introduce participants to the kind of work they will be required to do in the individualized instruction sessions and to increase their confidence in their ability to do independent work. Additional group sessions can be conducted to address problems common to several participants in individualized instruction. These sessions give the participants the opportunity to interact, support one another, and exchange information, insights, and progress reports. These sessions can also be opened to interested people who are not involved in the program.

The group sessions, which we have called "You and Yours" sessions, should provide a supportive atmosphere, a focus on the future, and stimuli for thinking about possible goals. The opening session should be interesting, provocative, and enjoyable. The leader starts by asking questions such as these:

- What would you do if you were told you had only twenty four hours to live? Whom would you choose to be with? Where would you go?
- What would you do if you were given one million dollars?

There is usually much laughter at the responses and comments of the participants. The energy level rises and an atmosphere of excitement prevails. After everyone has had an opportunity to speak, the leader shows how links can be drawn between dreams and reality. For example, the leader might say. "Let's take Angie's wish to travel around the world. How could she go about achieving that? What are the major steps toward getting there? What skills or steps has she already achieved? What skills or steps does she need to develop?" The participants then offer suggestions in response to the leader's questions. The leader summarizes the discussion by stressing that dreams might come true if a person is willing to act, that action begins with where the person is now, that one must recognize the intermediate goals and steps which lead to the achievement of long-term goals, and that one must work with the present situation and develop a plan.

The group sessions should help the participants achieve the following:

1. Develop long- and short-term goals
2. Develop realistic expectations about themselves
3. Develop realistic expectations concerning human relationships
4. Develop relationships between themselves and the environment
5. Develop self-control and undertake self-investment
6. Learn to recognize, manage, and use resources

The titles of the sessions should include such topics as "What do you want out of life and how do you get it?", "You and your environment," "You and your money," "You and your work," and "Community resources."

Individualized Instruction

While group instruction contributes to the participants' awareness of the need for decision making and goal setting, individualized instruction helps participants learn specific problem solving skills and procedures as they set goals and make decisions associated with their own transition. Individualized instruction involves private conferences between the instructor and the participant. It is intended to continue from a few weeks to several months, depending on the participants' goals, the amount of time available to prepare for the transition, and the particular problems to be explored. The purpose of such instruction is to support and assist

participants in applying concepts presented in the group sessions to their own situations.

Ideally, participants would move from the group sessions to immediate participation in individualized instruction. Because this is not always the case, however, the individualized curriculum is designed to accommodate persons who may not have participated in group sessions. A goal plan and progress record provide the framework for individualized instruction. The person's major educational goal (such as to choose and prepare for a career) is entered at the top of this form, along with the day by which the goal is to be reached. The progress record lists the weekly goals whose achievement is to lead to attainment of the major goal, and to record progress relative to weekly goals.

During each conference the instructor should help the participant review the goal(s) set during the previous conference, record the degree of achievement, and set goals for the week ahead. Goals for the week ahead will include a new attack on goals not achieved during the previous week or new goals focused on the next step to be taken to reach the major goal. Concepts presented in the group sessions are applied to the participant's own situation during the individualized conference. The participants learn skills related to problem identification, goal setting, information seeking and processing, decision making, planning, action taking, and action evaluation. It is not the function of the instructor to do for the participants that which they need to be able to do for themselves. The function of the instructor is to assist and encourage participants in setting goals and monitoring progress, to engage them in practicing new skills, and to support them in pursuing their goals. Many instructional modes are used, including telephone and in person interviews, visits to schools, training programs, community agencies, and housing units, reading; and paper-and-pencil activities.

The individualized sessions should be scheduled regularly and frequently—preferably an hour once a week. However, flexibility will be necessary to accommodate other demands on participants' time as well as any special needs. The first task of the instructor is to gain an understanding of the participants—their backgrounds and their ideas about their future. Problems must be explored, and individual goals must be set during the first few sessions. The instructor then helps the participant think through the goals and discover, create, carry out, and evaluate solutions.

Many participants have already settled on a way of handling a problem before they enter individualized instruction, however, in many cases they will not have considered alternatives. The suitability of a chosen approach to a problem will become apparent as the participant works through the exercises in the manual.

Examples

The following activities are from the program manual, *Managing Independent Living.*[2]

Example 1: In this section of the manual (pages 63–66), the participant's instructional objectives are to:

A. Demonstrate awareness that pursuing a career will necessitate the use of time, money, knowledge, skills, and community resources.
B. Present examples of material, human, and community resources.
C. Determine what resources are desirable for achieving each career alternative and which are required.
D. Differentiate between required resources that are now available and those that could probably be obtained.
E. Recognize multiple demands on resources required by career alternatives.

The suggested activities for each of the above objectives are:

A. Define "resource". Given the definition of the term and, a list of items, circle those you would regard as resources. Given a list of careers, specify resources each would require.
B. Thinking about the career alternatives listed, note the human, material, and community resources required to achieve each career alternative.
C. Same as B, above, for resources.
D. Given a list of the resources required for each alternative, circle those resources that are presently available. Star those that probably could be obtained and suggest ways of doing so. Underline those that would be difficult to obtain or develop now. During the student instructor meeting, discuss how the resources were classified and the appropriateness of the methods suggested for obtaining them.
E. Review case studies illustrating influence of resources on life style. List the features most important to your life style. Discuss. If you were to invest $3,000 in training, what decisions would you make regarding rent, food, clothes, and entertainment.

A similar approach is used to analyze the participant's need for housing. For instance, the participant must recognize that each housing

2. Because of limitations of space it is not possible to use the format given in the manual or to include all relevant items. In addition to the instructional objectives and suggested activities presented here, the authors included generalizations for each item, the process involved, student goal guides, and suggested references.—The Editor.

alternative places a number of demands on resources. Using a form provided by the instructor, the participant constructs a graph of the existing demand-supply relationship for each required resource. During a meeting with the instructor the participant explains the graph, projects total monthly money income and expenses, and compares the amount of money available for housing with the amounts required by each housing alternative (See page 181 of the manual for the demand-supply form, and pages 115–183 for the entire unit on housing.)

Example 2: In the section of the manual dealing with consumer goods and services (pages 185–283), the activities help the participant to see that a life-style transition affects wants and needs for goods and services. After reviewing wants and needs, establishing priorities, and learning about such problems as "impulse buying," the participant is expected to be able, for example, to:

A. Determine purchasing power.
B Determine monthly expenditures and the relationship between monthly income and expenditures.
C Determine nonmoney resources that could be applied to "identified ways and means alternatives."

The suggested activities for these objectives are:

A Tabulate your monthly income. Read "How to Make a Budget" in *Consumer Economics II,* APL Series (New York. Harcourt Brace Jovanovich, 1979). Review a list of fixed expenses. Select and list on an expenditure form those items which are your monthly fixed items. Add any item not listed. Read "Fixed Expenses" in *Reaching Your Financial Goals,* by the Money Management Institute (Chicago: Household Finance Corporation, 1978). Review a list of flexible expenses. Select and list on an expenditure form those items that are frequently flexible expenses for you. Add any items not listed. Read "Flexible Items" in *Reaching Your Financial Goals.* Also read "Possible Budget Items" and "Sample Budget" forms 1, 2, and 3 in *Consumer Economics II.*
B On a form, list your actual monthly expenditures. Classify them as fixed or flexible, and calculate total monthly expenditures. Subtract total monthly expenses from total monthly income. Discuss your expenditure form and the balance with the instructor. Are all essential categories included? Are expenses greater than income? Does income meet expenses, but there is nothing left? Are expenses less than income? Summarize your present purchasing power.
C Are there items you have now that could be converted or adapted to

meet a need or want? List any job or personal skills and talents you could exchange for goods and services that would satisfy your needs or wants. How much time have you? Can you wait until you save enough cash? Are you willing to wait? Can you use time to earn money or to produce the good or service needed or wanted, or to exchange skills and talents for needed or wanted goods and services? Summarize your available nonmoney resources.

The preceding activity is followed by a study of consumer credit, a review of cases illustrating the influence of resources on life styles, the drawing of a graph to represent demand and supply relationships for each required resource, and an analysis of values and goals, possible inconsistencies and conflicts, and consideration of alternative ways and means.

The curriculum can be adapted so that concepts and processes intended for the individualized sessions can be taught through group instruction and applied individual projects.

USE AND DISSEMINATION

The program can be conducted in a single curriculum, program, agency, or institution. Institutions involved in the program included a major university, a community college, a vocational and technical institute, and a residential correctional institution. Participants who successfully completed the program were awarded a certificate from the technical institute, and they had the opportunity to earn credit from the community college.

The program had a full-time instructor, who served about thirty persons a year. For other populations, where less individualized supervision is required, a part-time instructor might be employed. Where instructional personnel are already available, or where the curriculum is integrated into an existing program, the out-of-pocket operating costs can be limited to the purchase of instructional materials.

The program manual has been distributed to educators in thirty-seven states and in Canada. Requests have come from correctional institutions and agencies serving males as well as females, secondary schools, adult educators, institutions of higher education, and state education agencies. Articles about the program have appeared in the *Journal of Correctional Education*, 32.4 (June 1981) and *Family Relations*, 30.4 (October 1981). Reports concerning the program have been presented at regional, national, and international professional meetings attended by educators, sociologists, and corrections personnel.

RESULTS

Evaluation instruments and designs have been developed to assess participant progress and the impact of the program. The design involves collecting background information on the participants, keeping records of instructional sessions, compiling test data, using a goal attainment scaling model, recording the instructor's perceptions of competence in skills the program is designed to develop, noting the participants' reactions to the program, and carrying out follow-up studies of the participants after they have completed the program. The evaluation provided the basis for the recommendation to the legislature that the program be funded on a continuous basis by the state of Minnesota.

IMPLICATIONS

The Managing Independent Living Program can be viewed as a model in several ways:

- It is a process approach to developing complex intellectual skills, including reasoning, problem solving, decision-making, and management.
- It represents a cognitive approach to affective and cognitive development.
- The curriculum model makes explicit the links between abstract concepts and concrete situations.
- It is designed primarily to enable individuals to work at their own rate on their own goals. Individuals of diverse capability can be served.

Teaching the Economic Way of Thinking to High School Students: A Comprehensive Program

John S. Morton
Homewood-Flossmoor High School, Flossmoor, Illinois

INTRODUCTION

Students do not develop economic logic by the use of gimmicks or shortcuts. They need constant reinforcement of economic concepts at all levels of learning—knowledge, comprehension, analysis, evaluation, and synthesis. The approach used by teachers at Homewood-Flossmoor High School has four steps in which each step pushes economic reasoning to a higher level of learning. These instructional steps are:

1. Teach the basic principles of economics.
2. Reinforce these basic economic principles with various activities.
3. Have students apply economic logic in the study of a wide variety of subjects.
4. Have students apply economic reasoning to hypothetical decisions they will make as consumers, workers, and citizens.

The results of this approach have been impressive. Because economics is a required course for seniors, it probably has a more heterogeneous population than elective courses do. Yet, when compared with the national norming data provided with the *Test of Economic Literacy,* our students appear to gain economic understanding at a rate almost three times the national average.

Although the results of the *Test of Economic Literacy* were based on a year long course made up of thirteen units, in this report I shall concentrate only on our methods of teaching scarcity and basic microeconomic concepts. I will show how students can use the concepts to develop

an economic way of thinking. Note, also, that the activities described here can be used in a variety of high school courses, they need not be part of a formal course in economics.

CONCEPTS NECESSARY TO THE DEVELOPMENT OF ECONOMIC REASONING

The activities described in this report relate to several concepts listed in *A Framework for Teaching Economics. Basic Concepts*, published by the Joint Council on Economic Education in 1977. These are:

Economic wants
Productive resources
Scarcity and choice
Opportunity costs and trade-offs
Marginalism and equilibrium
Economic incentives
Voluntary exchange
Interdependence
Government intervention and regulation
Markets, supply, and demand
The price mechanism
Competition and market structure
Market failures

THE FOUR-STEP PROCESS

As students move from step to step, they learn to comprehend, apply, and analyze situations from an economic perspective. The steps are briefly described and illustrated below.

STEP 1. *Teach the Basic Principles of Economics*

At the beginning of the academic year the students get an overview of an economic way of thinking. First, they take a ten-item true-false test which contains statements such as the following:

- If someone makes an economic gain, someone else loses.
- A nonregulated monopoly charges the highest possible price.

Then they hear a lecture on the basic tenets of an economic way of thinking, and they discuss the answers to the test in the light of the concepts conveyed in the lecture. This initial activity shows the students that economics is not merely a compilation of facts, and that they must learn a new way of thinking about problems.

The students must obtain a good working knowledge of each economic concept. The economic concepts are covered thoroughly in sub-

sequent units of the course through lectures, discussions, and audiovisual presentations.

STEP 2. *Reinforce the Basic Economic Principles with Various Activities*

Economic principles can be reinforced through problem-solving. Students learn best by *doing*, and "problem sheets" are used to reinforce the concepts. For example, in one such sheet the students are given data on production possibilities for two products (such as guns and butter) and must draw a production possibility curve. Then they must answer several questions based upon the curve, such as. "If the economy was producing a total of one million pounds of butter and wanted to increase this by another one million, the required decrease in gun production would be _____ thousand."

Many of the problem sheets are similar to those used in typical economics courses, but others differ. Scarcity involves both social and individual decision making. A problem sheet on "The Cost of College Education" illustrates this point. The students are presented with hypothetical information on tuition, the cost of textbooks and school supplies, the salaries of university faculty and administrators, the university's sources of funds, scholarships, dormitory fees, and the like. Then they must indicate the cost of a college education to the student (including opportunity costs), the cost to the state's taxpayers, and the cost to society as a whole.

The students study price theory intensively before they are given problem sheets on this subject. They read the chapters in their textbooks on markets, prices, and competition. Then, case studies are used to examine how prices are set and to show the roles that prices play in an economic system. Thus, the students understand the basic concepts before quantifying them. The problem sheets force the students to deal with those concepts at a higher level. The cases deal with situations the students are familiar with, such as the factors affecting the prices of tickets to a rock music concert, of sports cars, and of CB radios. Similarly, the supply and demand curves the students must draw illustrate the laws of supply and demand through their influence on the price of tickets for sports events, candy bars, and permits for a new school parking lot. Along more serious lines, the students analyze the effects of rent controls (for example, "What are the arguments for and the arguments against rent control?"), describe the factors causing shifts in the supply and demand curves for specific food items, and answer questions on the impact of minimum wage legislation on youth unemployment. They learn how to determine whether demand is elastic or inelastic through the use of worksheets requiring them to do such things as explain why the demand

for a given product could be inelastic in one situation but elastic in another. In summary, the students learn how market prices are set, the effects of ceilings and floors on prices, and how a market solution compares with a command solution.

Step 3. *Have Students Apply Economic Logic to a Wide Variety of Subjects*

At this point the Homewood-Flossmoor economics program departs sharply from the traditional economics course, which ordinarily includes only Step 1 activities—although an increasing number include the problem-solving activities of our Step 2. However, if students are to learn economics, they must apply the principles to real-world or hypothetical situations. Problem solving forces them to concentrate. The problem-solving approach is used at some colleges, but the problems we use in our program are probably unique in that they do not require sophisticated mathematical skills.

The problem sheet "Thinking in an Economic Way" reinforces the concepts of scarcity and opportunity cost. The students see that decision making involves the weighing of costs and benefits. For example, the first few statements are popular cliches that are contrary to economic reasoning. The students discuss such statements as the following:

"The best things in life are free."
"Anything worth doing is worth doing as well as you can."
"There is no substitute for victory."
"Life is priceless."

At first, students tend to assert that love and friendship are the best things in life and that they are free. After examining the opportunity costs of preserving a relationship they see that these states are not free. They also learn that economic reasoning involves the consideration of more than money. In discussing the second statement the students realize that decisions involve trade-offs. If we did something as well as we could we might sacrifice all our scarce resources on that activity. Because few people want to make those sacrifices, we engage in a variety of activities in a way that will tend to maximize our total welfare. The fourth statement is the most controversial, and most students will say that life is priceless. However, when given examples of such behavior as smoking, drinking, hang gliding, using illegal drugs, and driving at excessive speeds the students see that some people will even trade an increased possibility of death for other things they see as benefits. In short, all actions involve trade-offs and opportunity costs.

Other items apply economic logic to social issues. Criminal behavior is discussed from both the sociological and economic points of view.

These views are compared and contrasted, with cost-benefit analysis being used to explain criminal acts and to consider possible means of deterring crime.

Using a sheet entitled "Pricing Problems" the students go beyond their previous study of price theory and begin to see the logic behind the laws of supply and demand. Some of the questions on the sheet are.

- What would happen in the short run if consumers boycotted beef? What would happen in the long run?
- True or false? Economists believe people clearly act in their own self-interest. Certainly, it is in people's self-interest to conserve their raw materials. However, whales are killed in such numbers that they may become extinct. How could that be in the self-interest of the whalers? Economists must be wrong about self-interest.
- A consumer group believes that the prices of necessities such as food, housing, energy, and medical care should be controlled by the government. "People can afford higher prices for luxuries," they reason, "but all of us—and especially the poor—suffer when the prices of necessities rise." Evaluate the effects of this plan. Are there better ways to help the poor?

Students can draw curves for weeks and not really understand why people want to buy more at a lower price and sell more at a higher price. More importantly, the sheet illustrates how the laws of supply and demand help us understand a variety of issues, including some nonmonetary ones. Price controls, abortion, condominium conversions, prostitution, government regulations, the market for marijuana, and conservation of whales are but a few of the subjects that can be discussed in the light of economic principles.

Another sheet, "Problems on Market Structure and Business," helps students to see that "monopoly" and "competition" are more than catch phrases. These concepts are applied to such situations as sports teams, physician's wages, oil pricing, littering, and hospital tactics. Among the problems and questions are the following:

- What is wrong with the bumper sticker, "Tax Corporations, Not People"?
- Monopolies will always charge the highest possible price True or false? Why?
- Championships are not a common commodity for Chicago's sports teams. In fact, they often lose more games than they win. Show that this might be the result of rational profit maximizing behavior, not inept management.
- A cost-saving tactic used by some hospitals is to lower the price of room and board in order to raise occupancy rates. Why would this

be a good idea for most hospitals? An official of the American Medical Association said: "Mainly, of course, one hospital gains at another's expense. I'm not sure competition does anything for the system. It's like drilling in someone else's oil field." Is he right or wrong? Why?

It is by applying economic concepts to a variety of situations that students finally learn an economic reasoning process.

STEP 4. *Have Students Apply Economic Reasoning to Hypothetical Decisions They Will Make as Consumers, Producers, and Citizens*

The major focus of economic education should be to make students better decision makers. If economic reasoning is the destination of a long voyage, understanding the theory gets the passengers only half way. If we do not want students to go adrift we must provide opportunities for them to apply theory to real-world situations. To improve decision making any analytical skills, Homewood-Flossmoor students must complete a consumer project, a business project, and a public finance project, among other requirements. Each project is a capstone activity for a unit of the course. These activities are briefly described below.

CONSUMER PROJECT. The consumer project is designed to help students apply economic concepts to consumer decision making. This increases their interest in economics because the benefits of consumer decision making go directly to them as individuals.

In this project the students must live for one year within a hypothetical income. First, they must choose a career. They investigate occupations by using a career computer, books, and magazines. They are encouraged to interview employers who hire people in their chosen careers. They must investigate at least three occupations and write an essay on the one they find most interesting. They describe the nature of the work, the education needed, the salaries, and the supply and demand conditions in the field. They must explain how the career fits their personal interests.

Once they choose a job and compute their disposable income, they plan preliminary budgets based on their values and goals. Budgeting is an application of the allocation of resources, and it reinforces the concepts of scarcity and opportunity cost. Using their preliminary budgets as guides, students buy cars, obtain housing, compare credit costs, and purchase insurance. They obtain information from businesses in the community.

The various decisions are brought together to form a final budget. They may develop their own budget formats, but each entry must be justified in terms of their goals and must reflect real world incomes and prices. For example, in regard to buying cars the students must explain how they decided whether to buy a new or a used car. This requires them to compare the costs and benefits of each type of auto, and they must also tell whether they paid cash or financed the car. The advantages and disadvantages of each method of payment must be explained, and students must explain how they accumulated the money for a cash purchase or obtained financing if the decision was to finance the purchase. Information on the costs of maintaining and operating the car must be provided, with an explanation of how the various expenses were computed.

In a similar fashion, students must explain the decision to rent or buy a dwelling unit. They are asked to tell why the particular location was chosen, what factors were taken into consideration in selecting the house or apartment, what type of financing was chosen (in the case of a purchase), what level services (if any) were necessary, and what other costs are involved besides rental or mortgage payments. These are but a few of the items the student must cover in discussing the use of credit, the purchase of insurance, the family food budget, and so on. By working through the many segments of the consumer project, students see the practical application of economic reasoning.

THE BUSINESS PROJECT. Students select corporations listed on a stock exchange, write for the annual reports, and analyze the selected companies. The objective is to teach students how a corporation operates, although we ask them to analyze the firm as if they were stock analysts. The class members plot the stock's prices for at least five weeks, write a brief history of the company, describe the firm's products and markets, and indicate the number of employees. After learning to read an income statement and balance sheet, the students analyze the financial condition of their chosen companies and make recommendations about whether or not to purchase the stock. They must consider such factors as current assets, current liabilities, net worth, sales, costs, taxes, profits, dividends, long-term debt, return on equity, price-earnings ratios, the probable future of the industry, and the like. This project is accompanied by the use of a stock market game in which students invest a hypothetical $100,000. They make biweekly decisions, and they can even sell short and buy on margin. The students gain an understanding of how businesses are run, see how profits serve as an economic incentive, and learn to analyze and interpret data.

THE PUBLIC FINANCE PROJECT. Students must attend a local board meeting to learn how they are affected by government. Most attend a high school board meeting. (Before starting this project many students

do not even know that schools are run by school boards.) After the meeting they must write a report describing and analyzing the board's actions, with particular attention to those concerning money. Other activities include interviewing candidates running in local elections, actually working in a candidate's campaign, writing a paper on the arguments for and against the real-estate tax, interviewing public officials, and writing proposals to reform the tax laws. By observing the process of government decision making the students should become more knowledgable, active, and effective as citizens.

EVALUATION

The *Test of Economic Literacy* is used to evaluate the economics components of our course. We believe that the students must show overall gains if our course is to be judged as successful. The results are also compared with those obtained during the norming of the test with a nationwide sample of high school students. Table 1 shows the mean scores on forms A and B of the *Test of Economic Literacy* achieved by our regular students, honors students, and the national norm group. The results for Homewood-Flossmoor students are for the 1980–81 academic year.

It is evident that our students made substantially greater gains in performance on the *Test of Economic Literacy* than the national sample, even when our students' pretest mean scores were quite close to the national group's.

The *Test of Economic Literacy* does not cover the consumer economics content of our course. To evaluate the effectiveness of that segment, we developed our own Test of Consumer Competencies. The questions are based on the consumer unit objectives, and thus we feel that the test has high content validity. The test has 50 multiple-choice items, covering such subjects as money management, food, housing, auto insurance, credit, life insurance, saving, investing, and consumer protection. There are questions designed to test comprehension, application, and analysis as well as knowledge. Some of the items require the students to use their mathematical skills. (For example, to answer one question students must compute the yield on a share of stock.) Our test was found to have a Kuder-Richardson Formula 20 reliability rating of 0.783, which is higher than that of most teacher-made tests. The students had a mean gain of 14.9 points on the test.

There is other evidence of the success of the course, although the data are not as "hard" as those obtained by formal test procedures. For example, an unusually large number of Homewood-Flossmoor students "test out" of college economics courses. On surveys of graduates conducted by the school, it was found that more students named economics

Table 1. Pre- and Post-Test Mean Scores on the Test of Economic Literacy

Group	Form A		Form B	
	Pretest	Post-test	Pretest	Post-test
Homewood-Flossmoor				
Regular students	19.2	33.9	22.1	32.1
Honors students	26.8	38.4	28.5	38.6
National norm sample	18.9	24.0	20.8	24.4

as the most valuable course they had taken in high school. When asked which mandatory courses should be dropped as a graduation requirement, only 1 percent of the students selected economics—a much lower figure than that registered for any other course.

SUMMARY

The key to a successful economics program is an emphasis on decision making. The approach outlined in this paper works. All aspects of the course help to improve economic reasoning, and the systematic testing program indicates that we have been successful in teaching economic principles. All of the activities could be adopted to form a complete course, or they could be selectively included in existing courses. Positive responses from students, parents, and the community shows that this approach should receive wide acceptance.

Teaching Critical Thinking in Economics at Illinois State University

Virginia Lee Owen
Illinois State University, Normal, Illinois

INTRODUCTION

Increasingly, it appears that students are graduating from college without the ability and background for critical thinking and analysis. This may be the result, in part, of a decreased emphasis on analysis in the public schools and of increasing student loads at the college level, which make individual assignments difficult in most beginning classes. There are some exceptions—English, public speaking, and many business courses have made personal interaction possible by restricting class enrollments. This makes it possible to give assignments that provide practice in analysis. Such is not the case for the social sciences at Illinois State University. Indeed, if enrollment limits were established, the needs of students for social science credit hours could not be met without doubling or tripling the faculty.

Economics offerings exemplify the problem. Introductory courses are regularly taught in sections with as many as 400 students, and these sections are not broken down into discussion groups. Clearly, practice in analytical thinking through individually graded assignments is not practical in that situation. The temptation is to emphasize memorization of definitions, theories, and tools rather than their application. Students have little preparation for test questions that require analytical thinking. Poor results are obtained with such questions, and a feeling of frustration or even hostility is created. If analytical thinking is not demanded on examinations, the instructor has simply yielded to the problem created by large enrollments and has left it to the upper-level courses to provide this skill.

Critical thinking skills, however, do not develop automatically with the onset of the junior or senior year. Teachers of upper-division classes

often complain that students do not know how to begin an analysis, let alone complete one with skill. Thus, a class that is supposed to be devoted to refinement often becomes a course in the basics. Until the problem is attacked in a systematic way, these deficiencies in critical thinking and analysis will not be removed. This paper describes one proposal for teaching critical thinking skills in economics systematically and reports the results of the experimental use of part of the proposal.

A PROPOSAL FOR TEACHING CRITICAL THINKING SKILLS

This proposal is based upon several assumptions about the learning process and the specific requirements for courses at Illinois State University, a multipurpose institution enrolling over 19,000 students.

1. Attainment of critical thinking skills requires more than one exposure to critical thinking activities. Repetition is an important part of the process of learning analytical skills.
2. Critical thinking can be broken down into identifiable steps or subprocesses that the student can learn separately.
3. To put the pieces together, an integrating experience is required for students who have learned independent critical thinking skills.
4. The subject matter of the materials used in critical thinking activities can be made more or less sophisticated without compromising the objective of having students learn critical thinking skills.
5. Students are interested in controversial policy issues.

The gist of the proposal is that assignments focused on the attainment of critical thinking skills should be included in all economic principles and intermediate theory sections. Each assignment should focus on an economic policy issue as the subject for analysis. The assignments should build analytical skills step by step, first by asking only for a statement of issues and then for classification of the issue by type, such as "value" or, fact. This should be followed by the completion of more complex tasks, such as pointing out fallacies and evaluating the adequacy of supporting evidence. The final assignment should require the student to combine all these tasks in a comprehensive analysis.

Obviously, the issues studied will depend on whether the course concerns microeconomics or macroeconomics. Each assignment should be part of an instructional package that includes an explanation of the skill along with examples of its use. A new and controversial issue for student practice in the particular skill should complete each package. A set of instructional packages containing explanatory material, examples,

and assignments allows for the easy use of this approach by instructors who do not wish to design assignments themselves or to spend class time explaining the process.

There are differences in the requirements the instructional packages must satisfy for the introductory and intermediate theory classes. For large introductory sections, these are the requirements:

1. The economic content must be elementary.
2. The packages must be self-teaching, i.e., they should provide instructions and activities students can carry out on their own. The ideal method is to use the interactive computer learning system. (The Department of Economics has its own terminal room for student use.) The self-instructing format of computerized interaction can be printed in booklet form for those who do not wish to use the computer.
3. The packages must be easy to grade. Computer grading is probably a necessity for most instructors of large-section classes. This requires the construction of short-answer questions. It is difficult but not impossible to cover analysis questions in this format. (The complex application questions of the *Test of Understanding in College Economics* are examples of this.)

The intermediate theory packages, like the introductory ones, must be self-teaching. Although the tests must be relatively easy to grade, the numbers of intermediate students are small enough to permit the use of some short essay questions. Guidelines for appropriate answers must be provided for the faculty, however. In contrast to the introductory packages, the economic content of the intermediate theory materials must be related to the topics taken up in class in order to avoid instructor complaints that the packages "waste time." For intermediate theory classes, therefore, the requirements are the following:

1. Content must be keyed to the level of economic analysis in intermediate theory.
2. Students must be able to carry out the instructions and activities on their own. The contents need not necessarily be computerized, however, because the enrollments are small enough to allow interaction in class.
3. The packages should be easy to grade but need not necessarily be in the short-answer format.

This proposal follows from the assumptions stated at the outset. Only one aspect of critical thinking skills is considered at a time. Each package contains repetition in the practice of the specific goal offered. The introduction of the whole process at different levels of sophistication provides additional repetition. The use of policy issues as the vehicle for

analysis should help to maintain student interest. It is hypothesized that this approach will not only teach critical thinking skills but will also enhance student understanding of economics.

EXAMPLES OF CRITICAL THINKING ASSIGNMENTS*

To illustrate the points made above, a few examples of the assignments follow. These were prepared for an intermediate macroeconomics course offered in the fall of 1981. First, the course objectives, which were stated in behavioral terms, were given to the students. Some of the objectives pertaining to critical thinking are listed below.

After completing Econ. 341, you should be able to:

- explain the relationship between assumptions and conclusions of ma croeconomic models;
- apply macro theory to the analysis of contemporary issues;
- point out the value judgments implicit in macro policy actions;
- explain the rationale for conflicting macro policy recommendations,
- describe the advantages and disadvantages of various macro policy tools.

The students are informed of the requirements for homework, of the types of examinations to be given, of the grading system, and the like.

The first two assignments involve the specification of issues. In Critical Analysis 1 the subject is the controversy over the federal budget as it pertains to spending on social programs. Both the Democratic and Republican arguments are given. Ten questions are then listed. The students must indicate whether each item is a question of fact, value, or definition, and must point out items that are irrelevant to the issue. The following are samples of the questions in this exercise:

- Are Social Security recipients able to get other income?
- Should social programs be maintained at the expense of defense?
- What is the meaning of "an adequate standard of living for the elderly?"

Critical Analysis 2 includes three issues. One is the argument that defense spending "actually generates unemployment. " and is based on

* Because of space limitations it has been necessary to abbreviate some of Dr Q[illegible]en's assignments. Only a few of those accompanying her original report are included h[illegible]e — THE EDITOR

a study reported by United Press International. The second is called "Rating Reagan" and was taken from an article in the *Wall Street Journal* of October 16, 1981. The third deals with the "Ills, Bads, and Disamenities" that accompany growth, as seen by E. J. Mishan in *The No Growth Society,* edited by Mancur Olson and Hans H. Landsberg (New York. W. W. Norton & Co., Inc., 1973). The students are required to state the main issue of each reading and to tell whether the issue hinges on questions of fact, definition, or value.

Assumptions are dealt with in Critical Thinking 3. The major causes of inflation as seen by the Chamber of Commerce, the AFL-CIO, and the author of an article in the *Reader's Digest* of January 1979 are given. The student must list two assumptions implicit in each of the three arguments.

Critical Analysis 4 and Critical Analysis 5 focus on evidence in support of arguments. In the first assignment the students read a newspaper article on President Reagan's tax cuts. They then consider the type of evidence given in the piece. Is it based upon factual data, the opinion of experts, or reasoning that supports the conclusion? Is the evidence appropriate? Is there sufficient background information to make the statistical data meaningful? Are the "authorities" cited biased or uninformed? Have reasoning and theoretical concepts been misapplied? In the second exercise the students are asked to indicate the kinds of data they would look for to support certain conclusions. For example, one conclusion is, "The Federal Reserve regularly makes the wrong decisions about how to change the money supply." In addition, various individuals and other sources are listed, and the students must evaluate each source in terms of its reliability in regard to the argument. (Paul Volcker and Milton Friedman are listed for the item on the Federal Reserve, for example.)

The fallacy of composition is the subject of Critical Analysis 6. The fallacy is defined, and the students are given two statements—one about the size of the national debt and the other about consumer debt—and told to point out the fallacy in the statements and provide evidence for the designation.

Critical Analysis 7 involves the *post hoc, ergo propter hoc* fallacy—the error of assuming that because one event followed another event it must have been caused by the prior event. Statements on oil profits, deficit spending, and high interest rates are given, and the students must spot the fallacy and provide a different explanation for the chronological order of the events. Of course, economic reasoning must be used. The following is the statement on oil profits:

> The domestic oil companies in the U.S. are near monopolies. They have the power to take advantage of the consumer nearly at will. The supply shock from OPEC in the early 1970s was worsened by the actions of these firms. After OPEC raised oil prices, the prices of oil products rose in the

U.S. and the total profits of oil companies increased. An inflationary supply shock was worsened by the monopoly power of the domestic oil industry which took advantage of the OPEC excuse to increase its profit margin.

Critical Analysis 8 explains circular reasoning—the use of a complex argument in which the conclusion is actually assumed initially. The fallacy is not always obvious because different terminology can be employed for the assumptions and conclusion. The students are presented with two statements and are asked to detect the circular reasoning and then to rewrite the argument to avoid circularity. One of the statements is as follows:

U.S. business is inefficient compared with the rest of the world. Such inefficiency means that the cost of producing goods in the U.S. exceeds that of other countries. Such costs include higher wage rates and obsolete equipment. U.S. businesses during the '70s invested very little in new plant and equipment compared to other countries or to ourselves in earlier periods. Given higher costs, the U.S. must price its goods higher than world market prices. Therefore, other countries are more efficient than the U.S.

The second statement deals with the relationship between high interest rates and savings.

Some simple formal logic is introduced in Critical Analysis 9 in the form of syllogisms. The syllogism is defined and then illustrated with examples using the relationship between the money supply and inflation or deflation. Some of the examples are invalid and some have incorrect conclusions. The students are presented with several arguments and asked in each case to point out the syllogism and to assess its validity in each. The following is an example:

Economists frequently assume that investment is negatively related to interest rates. Data do not support this, however. For example, during the sixties interest rates reached record heights. Investment should have declined, but in fact it rose. The mid sixties were a boom period for business investment. Thus investment is not negatively related to interest rates.

Other arguments deal with government spending, taxes, and the relationship between wages and inflation.

Critical Analysis 10, called "Organizing an Argument," is presented in its entirety:

For each of the following propositions, state one reason which supports it. Then in outline form develop that reason with logic, facts, or assumptions which lead to defending your reason. You need not look up the facts other than those available in your textbook.

Proposition 1: Variable mortgage interest rates (a plan in which mortgage rates can be changed during the term of the loan in accordance with the state of the economy) help to limit the inflation.

Proposition 2: Government regulation of industry during the 1970s caused a decline in U.S. productivity growth.

Proposition 3: Wage and price controls are unfair.

The final critical thinking assignment requires the students to use what they have learned in the preceding ten short assignments to write a five-page analysis of an article that presents a particular point of view. The articles used recently were John Kenneth Galbraith's "Why Reaganomics Can't Work," which appeared in *The New Republic* of September 1981, and Irving Kristol's "The Case for a Massive Tax Cut" in the *Reader's Digest* of April 1979.

A FEASIBILITY STUDY

To test the feasibility of the proposal, a pilot study was made in the 1981–82 fall semester in two intermediate macroeconomics sections taught by Virginia Owen. The experimental section used the whole package—all ten critical thinking assignments plus the final article-evaluation assignment. The control section was given the conventional term-paper assignment. Both classes used the same text, Robert J. Gordon's *Macroeconomics* (Boston. Little, Brown & Co., 1981), and both were given the same reading assignments and homework problems (primarily mathematical) in the basic text. Both classes took the same exams, and the scores from the two sections were combined to determine the overall distribution and letter grades. Problems and essays were included in all examinations.

The critical thinking assignments did not completely fit the model described earlier, and the explanatory material is not completely self-contained. Thus, some class time in the experimental section had to be spent on explaining the concepts and exercises. The control section, therefore, had more time for the regular textbook material. The instructor personally graded the assignments in the experimental group and returned them with model answers. The economic concepts covered were less sophisticated than they will be when the entire system is implemented. This was because many students were being exposed to critical thinking concepts for the first time. When all students are introduced to critical thinking skills in their introductory courses it will not be necessary to simplify the economics or the learning process.

There were 43 students in the experimental group and 46 in the control section. Intermediate macroeconomics is required of economics

majors, who usually take it in their junior year. A number of business majors also enroll, and occasionally a master's candidate will take the course. Because it has a reputation of being difficult, marginal students postpone taking it until their senior year. The result is a bimodal ability distribution, one mode pertaining to the group of very good students and the other, to the marginal students. Registration was unrestricted, and both classes were offered at desirable times. The control group appeared to be slightly more able than the experimental students, more had averages above B and fewer averages below C. A greater percentage of the control students were seniors and graduate students.

Two measures of success were used as dependent variables in a multiple regression analysis. The first was the final grade in the course. This was a combination of homework grades, performance on essay and problem tests, term paper or critical analysis grade, and score on the optional comprehensive essay and final exam problem. The second measure of success was the score on the analysis section of the last exam. A situation using intermediate economics concepts was presented for analysis. Two hypotheses were developed:

- *Hypothesis 1.* Students' scores on the analysis section in the final test will be significantly improved by exposure to critical thinking assignments.
- *Hypothesis 2.* Final course grades are significantly improved by exposure to critical thinking assignments.

As a first approximation, a test of the significance of the difference between means was made on the mean final grade and mean score on the analysis section for the two classes. There was no significant difference between the control and experimental groups. These measures were then regressed upon demographic variables (age, gender, class), ability variables (ACT scores, grade point average), and effort variables (score on homework problems, number of homework problems completed, score on critical thinking assignments, and average score per critical thinking assignment). In some of the regressions, the number of homework problems completed was substituted for the homework scores because the students could have had a learning experience even if they did the problems incorrectly. (When correct answers are provided, students who have tried the assignments will gain more than those who ignore them.) Similarly, in some regressions the average score per critical thinking assignment was substituted for the total critical thinking score. This was to account for the possibility that students who already possessed critical thinking skills might not do all the assignments but might score very well on the ones they did complete.

Regressions were run on data pooled from both sections, with a zero score for critical thinking measures from the control group, since they were not exposed to the assignments at all. Regressions were also run on the experimental section alone, and on subgroups for GPAs below C and above C. The most consistently significant variable was the score on the homework problems or the number of homework problems completed. The GPA was frequently significant in regressions for the final grade, but never for the analysis section. Performance on the critical thinking assignments, however measured, was more significant in explaining the analysis subscore than the final grade. (The regression results were improved whether measured by significance of regression coefficients, adjusted R^2, or significance of F-ratios when the average critical thinking score was used rather than the raw total.)

The demographic variables of age and gender were never significant, and class standing was significant only in some regressions for the final grade On the whole, the regressions explaining final grade were significantly better than those for the analysis section score. (Some adjusted R^2's for the analysis section were under .10, and the only insignificant F's at the 5 percent level or better were for these regressions.) A remarkable finding was that the ACT scores were not significant in any of the regressions. This can be explained, perhaps, by the need for knowledge of economic theory in order to do well in intermediate theory courses. Grade point averages may reflect this knowledge at the junior/senior level better than ACT scores.

When the students were classified by GPA for separate analysis some interesting changes occurred in the regression results. For those with marginal GPAs, the critical thinking score was significant in both the final grade and the analysis section score regressions. (The sample, however, contained only 16 students.) The highest R^2 of any regression occurs with this group in the final grade regression (.96). For those with GPAs above 2.00 (where A = 4.00), the general results are confirmed that the homework score is the most significant determinant of final grade and the critical thinking score is the most significant determinant of the analysis section score.

CONCLUSION

Students' critical thinking skills can be improved by providing assignments specifically designed for that purpose. The assignments used in this experiment proved to be generally successful and were especially helpful to the weaker students. This conclusion is supported not only by the regression analysis, but also by the performance of the experimental

section, which was poorer in ability at the outset than the control section, but did equally well by the end of the course. It appears that good students have already acquired these skills in large measure, so that specific assignments at the intermediate level are not as important for them as for the weaker students. This might not hold if the intermediate macroeconomics assignments had capped a series of critical thinking activities in the principles course, as intended in the proposal and had, therefore, contained more sophisticated economics problems. This experiment, however, justifies the use of the overall program design.